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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,000	10/17/2003	Masayuki Furumiya	NEC 03FN026	4404

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EXAMINER	
TRAN, THANH Y	

ART UNIT	PAPER NUMBER
2822	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/688,000	FURUMIYA ET AL.	
	Examiner	Art Unit	
	Thanh Y. Tran	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *14-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-6, 8-9, and 12-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Kono et al (U.S. 6,337,824).

As to claim 1, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device comprising: a first conductivity type semiconductor substrate ("P substrate" 35) having a top surface and a bottom surface, the first conductivity type semiconductor substrate ("P substrate" 35) being connected to a first power supply ("ground voltage GND"/GND) (see figure 11, col. 19, line 3); a second conductivity type semiconductor layer ("N well" 30) having a top surface and a bottom surface, the second conductivity type semiconductor layer ("N well" 30) being provided on the top surface of the first conductivity type semiconductor substrate ("P substrate" 35), the second conductivity type semiconductor layer ("N well" 30) being connected to a second power supply ("GND", figure 9), the bottom surface of the second conductivity type semiconductor layer ("N well" 30) contacting with the top surface of the first conductivity type semiconductor substrate ("P substrate" 35); a device forming portion (comprising 40, 41a, 41b, and 46) including a first conductivity type well region ("n-type" well region 41a, 41b, 46) and a second conductivity type well region ("P well" 40), the device forming portion having a top

surface and a bottom surface, the device forming portion being provided on the top surface of the second conductivity type semiconductor layer ("N well" 30), the bottom surface of the device forming portion contacting with the top surface of the second conductivity type semiconductor layer ("N well" 30), the first conductivity type well region ("n-type" well region 41a, 41b, 46) and the second conductivity type well region ("P well" 40) being provided on the top surface of the second conductivity type semiconductor layer ("N well" 30); a decoupling capacitor ("Cdl", figures 10 and 11) formed at an interface between the top surface of the first conductivity type semiconductor substrate (35) and the bottom surface of the second conductivity type semiconductor layer ("N well" 30) (see figures 10 and 11; col. 18, lines 36-42; and col. 19, lines 12-24).

As to claim 2, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein the second conductivity type semiconductor layer ("N well" 30) is provided on an entire top surface of the first conductivity type semiconductor substrate (35), and a bottom surface of the first conductivity type semiconductor substrate (35) is connected to the first power supply ("ground voltage GND"/GND, figure 11) (see col. 19, line 3).

As to claim 3, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein the device forming portion has a first conductivity type well ("n-type" well region 41a, 41b, 46) contacting the second conductivity type semiconductor layer ("N well" 30) and connected to a third power supply ("Vsan", figure 10) and another decoupling capacitor (Cdl) is formed at an interface between the first conductivity type well ("n-type" well region 41a, 41b, 46) and the second conductivity type semiconductor layer ("N well" 30) (see col. 18, lines 36-39).

As to claim 4, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein device forming portion has: another second conductivity type semiconductor layer ("N well" 36) electrically connected to the second conductivity type semiconductor layer ("N well" 30), and a first conductivity type well ("n-type" well region 37a, 37b) provided on the another second conductivity type semiconductor layer ("N well" 36) contacted with the another second conductivity type semiconductor layer ("N well" 36) and connected to a third power supply ("Vsap"), and another decoupling capacitor ("p-n junction capacitance"/Cdh) (col. 29, lines 45-49, and lines 60-67) is formed at an interface between the first conductivity type well ("n-type" well region 37a, 37b) and the another second conductivity type semiconductor layer ("N well" 36).

As to claim 5, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein the device forming portion (comprising 40, 41a, 41b, and 46) has an active element ("gate electrode layer" 42) connected to the third power supply (Vsan).

As to claim 6, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein a potential of the third power supply (Vsan) differs from potentials of the first and second power supplies ("GND", figures 9 and 11).

As to claim 8, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein the second conductivity type semiconductor layer ("N well" 30) is locally provided on a top surface of the first conductivity type semiconductor substrate ("P substrate" 35), the device forming portion (comprising 40, 41a, 41b, and 46) is formed in a region on the top surface of the first conductivity type semiconductor substrate (35) where the second conductivity type semiconductor layer ("N well" 30) is not provided, and the first conductivity

type semiconductor substrate (35) is connected to the first power supply ("ground voltage GND"/GND, figure 11) (see col. 19, line 3) via the device forming portion (comprising "40, 41a, 41b, and 46"/"52, 54").

As to claim 9, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein the device forming portion (comprising 40, 41a, 41b, and 46) has a first conductivity type well ("n-type" well region 41a, 41b, 46) and the first conductivity type semiconductor substrate (35) is connected to the first power supply ("ground voltage GND"/GND, figure 11) (see col. 19, line 3) via the first conductivity type well ("n-type" well region "41a, 41b, 46"/"52, 54").

As to claim 12, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein the second conductivity type semiconductor layer ("N well" 30) is connected to the second power supply ("GND") via the device forming portion (comprising 40, 41a, 41b, and 46).

As to claim 13, Kono et al discloses in figures 9-11 a semiconductor integrated circuit device, wherein the device forming portion (comprising 40, 41a, 41b, and 46) has a second conductivity type well ("P well" 40) and the second conductivity type semiconductor layer ("N well" 30) is connected to the second power supply ("GND") via the second conductivity type well ("P well" 40).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al (U.S. 6,337,824) in view of Disney (U.S. 6,768,171).

As to claim 11, Kono et al does not disclose a semiconductor integrated circuit device wherein the substrate body has a resistivity of 100 Ω-cm or higher.

Disney discloses in figure 7A a semiconductor integrated circuit device wherein the substrate body has a resistivity of 100 Ω-cm or higher ("100-150 ohm/cm") (see col. 8, lines 60-67). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Kono et al by having a substrate body has a resistivity of 100 Ω-cm or higher as taught by Disney for providing a proper charge balance among the alternating p-type and n-type layers that are formed in the device.

5. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al (U.S. 6,337,824) in view of Kawaguchi et al (U.S. 6,259,136).

As to claims 7 and 10, Kono et al does not disclose the first conductivity type semiconductor substrate has: a substrate body, and a surface portion having a lower resistivity than that of the substrate body.

Kawaguchi et al (U.S. 6,259,136) discloses in figure 3 a semiconductor integrated circuit device, wherein first conductivity type semiconductor substrate (11) has: a substrate body (including 14), and a surface portion (15) having a lower resistivity than that of the substrate body (including 14) (see col. 5, lines 58-64). Therefore, it would have been obvious to a person

having ordinary skill in the art at the time the invention was made to modify the semiconductor integrated circuit device of Kono et al by having the first conductivity type semiconductor substrate has: a substrate body, and a surface portion having a lower resistivity than that of the substrate body as taught by Kawaguchi et al for providing a high performing conductivity type semiconductor substrate.

Response to Arguments

6. Applicant's arguments with respect to claims 1 –13 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on M-F (9-6:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith, can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TYT

Zandra V. Smith
Supervisory Patent Examiner
13 NOV. 2006